

REMARKS

The Examiner's Action mailed on September 29, 2008, has been received and its contents carefully considered.

In this Amendment, Applicant has canceled claims 1, 3 and 5, and amended claims 6 and 7. Claim 6 has been rewritten in independent form to include all features recited in its basis claim, i.e., claim 1. Claim 7 has been also rewritten in independent form to include all features recited in its basis claim, i.e., claim 3. Accordingly, it is submitted that claims 6 and 7 have been amended in a manner that would not require further search and/or consideration on the part of the Examiner, and a Request for Continued Examination (RCE) is not required. Claims 6 and 7 are the independent claims, and remain pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

The Examiner has rejected claim 6 as being anticipated by *Ryu* (US 2004/0119076). Claim 6 is not anticipated by the cited reference for at least the following reasons.

It is well settled that a reference may anticipate a claim within the purview of 35 U.S.C. § 102 only if all the features and all the relationships recited in the claim are taught by the referenced structure either by clear disclosure or under the principle of inherency.

Claim 6 is directed to a semiconductor device that has an epitaxial layer, an impurity region, a further impurity region and a channel region. The epitaxial layer has a first conductivity. The impurity region is formed by doping a surface portion of the epitaxial layer with an impurity of a second conductivity. The impurity region has a

profile such that a near surface thereof has a relatively low second-conductivity impurity concentration and a deep portion thereof has a relatively high second-conductivity impurity concentration. A second-conductivity impurity concentration in an outermost surface portion of the impurity region is controlled to be lower than a first-conductivity impurity concentration in the epitaxial layer. The further impurity region doped with an impurity of the first conductivity is formed on a surface portion of the impurity region.

Claim 6 further recites that the channel region having the first conductivity is formed in the outmost surface portion between the epitaxial layer and the further impurity region of the first conductivity. As is illustrated by way of an example in Applicant's Figure 3, the channel region 31 having N conductivity (i.e., the first conductivity) is formed in the outmost surface portion between the epitaxial layer 2 of N conductivity and the further impurity region 4 of N conductivity (i.e., the first conductivity). These features of the invention are not disclosed by the cited reference.

Ryu is directed to a semiconductor device that includes, *inter alia*, an N-type silicon carbide region 26, a p-well 20 and an N⁺ silicon carbide 24 (see *Ryu*, Figure 5D). At page 4, lines 1-6 of the Action, the Examiner states as follows:

Ryu teaches... wherein a channel region (**in layer 26** between layers 24) having the first conductivity (n type) is formed in the outmost surface portion between the epitaxial layer (layer 26) and the further impurity region (layer 24) of the first conductivity.

The Examiner asserts that a region in layer 26 is formed between layer 26 and layer 24. However, a region in layer 26 is still a portion of layer 26. A portion of layer 26 cannot be located between the layer 26 itself and other layer 24. A portion of layer 26 is just disposed within the layer 26.

In contrast, as shown in Applicant's Figure 3, the claimed channel region 31 is not a portion of the epitaxial layer 2, but a separate portion that is formed between the epitaxial layer 2 and the further impurity region 4.

Moreover, as shown in *Ryu*'s Figure 5D, it is the p-well 20 that is disposed between layer 26 and layer 24. There is no disclosure that a region having N-type is formed in the outermost surface portion of the p-well 20. Thus, *Ryu* does not disclose any channel region having N-type between layer 26 and layer 24, as would be required by claim 6.

It is thus submitted that claim 6 is *prima facie* patentably distinguishable over the cited reference. It is requested that this claim be allowed, and the rejection be withdrawn.

The Examiner has further rejected claim 7 as being obvious over *Ryu* in view of *Huang* (USP 6,373,102), and further in view of *Pavlidis et al.* (USP 4,827,319). Claim 7 recites forming a channel region having the first conductivity in the outermost surface portion of the impurity region, as is similarly specified in claim 6. As shown in Applicant's Figure 3, the claimed channel region 31 is formed in the outermost surface portion of the impurity region 3, and has N conductivity (i.e., the first conductivity).

At page 7, lines 1-5 of the Action, the Examiner states as follows:

Ryu teaches ... so as to form a channel region (between layers 24 in layer 26) having the first conductivity in the outmost surface portion of the impurity region.

The Examiner equates *Ryu*'s p-well 20 with the claimed impurity region (see the Action, at page 5, line 3 from the bottom). Accordingly, the Examiner asserts that a region in layer 26 is formed in the outmost surface portion of the p-well 20. However,

as shown in *Ryu*'s Figure 5D, the layer 26 is different from the outmost surface portion of the p-well 20, and thus no region in layer 26 can be formed in the outmost surface portion of the p-well 20.

Further, there is no disclosure or suggestion that a region having N-type is formed in the outermost surface portion of the p-well 20, as would be required by claim 7.

Because neither *Huang* nor *Pavlidis et al.* overcome the above-noted deficiencies of *Ryu*, it is submitted that claim 7 is *prima facie* patentably distinguishable over the cited references. It is requested that this claim be allowed, and the rejection be withdrawn.

It is submitted that this application is in condition for allowance. Such action and the passing of this case to issue are requested.

Should the Examiner feel that a conference would help to expedite the prosecution of the application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Should any fees be required, the Commissioner is hereby authorized to charge such fees to our deposit account No. 18-0002, and is requested to advise us accordingly.

Respectfully submitted,



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Date

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